

ABSTRACT

A method of performing an energy transfer luminescence assay to determine an analyte in which a donor species is irradiated to raise the donor species to an excited state, and the analyte causes a change in the excitation condition of at least one of the donor species and an acceptor species and said change is monitored to determine the analyte. The donor species is provided as, in or adsorbed to a solid phase and is an up-conversion medium capable of effecting, by energy pooling or otherwise, an energy transition to an excited state by absorption of electromagnetic radiation having an energy less than that of said transition. The acceptor species is bound or is capable of being bound directly or indirectly to the surface of said solid phase.

In the method, the donor species is irradiated with said electromagnetic radiation and luminescence is detected in at least one spectral region characteristic of the emission of the donor species and/or the acceptor species provided that the excitation of the acceptor species to an excited state capable of luminescence in a defined spectral region of the acceptor species does not occur by absorption of a single quantum of the radiation used to excite the donor species.